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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,123	01/14/2004	William A. Lenkner	13DV-14289 (07783-0168)	3822

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EXAMINER	
LIN, JAMES	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/757,123	LENKNER ET AL.	
	Examiner	Art Unit	
	Jimmy Lin	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The amendment filed 6/26/06 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "which are usable in high temperature environments of 2000 °F or higher, as previously discussed" [0027].

Paragraph [0003] discusses the environment of combustors having temperature environments where part surface temperatures reach about 2000 °F and applying coating layers, such as the coating layer of claim 1, onto the parts to act as radiant heat reflectors. The new amendment in paragraph [0027] is addressing the temperature environment of the deposition chamber, wherein the tray substrate can have a high melting point metal that can be used in high temperature environments of 2000 °F or higher. Paragraph [0027] discusses the temperature environment of making the coating layer, while paragraph [0003] discusses the temperature environment to which the coating layer is applied. Therefore, paragraph [0003] does not reasonably suggest to one skilled in the art that the metal substrate in the deposition chamber must be useable in temperature environments of 2000 °F or higher.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation of "the plurality of trays" (claim 5) is inconsistent with the limitation of "at least one stationary tray" (claim 1). The plurality of trays of claim 5 does not include the case of having only one tray, which claim 1 is capable of having. Does the limitation of "at least

one stationary tray" include the case of having only one tray? For the purpose of this examination, it will be interpreted to include the case of having only one tray.

The term "high temperature metals" in claim 9 is a relative term which renders the claim indefinite. The term "high temperature metals" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The specification notes that high temperature metals are metals having a high melting point, such as stainless steal. It is indefinite as to what high temperature would be required for a metal to be considered as having a high melting point.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 – 4, 7-8, and 13 – 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Gray et al. (US 4,879,140).

Gray et al. teaches a method of depositing a SiO_2/TiO_2 multilayer (column 4, lines 6 – 8), the method comprising:

providing a chamber having an inside surface (column 3, lines 15-17), the chamber supporting at least a substrate (i.e., a stationary tray) (column 3, lines 32-34), each tray having at least two surfaces.

applying at least one layer of a first material having a high index of radiative reflectance (i.e., TiO_2) to the at least two surfaces;

applying at least one layer of a second material having a low index of radiative reflectance (i.e., SiO_2) over the at least one layer of the first material such that the combined layers of first and second material meet a predetermined spectral reflectance profile (column 4, lines 1-8; column 2, lines 1-2).

Gray also teaches that elevating the temperature of the film/tube combination increases tensive forces (column 6, lines 59 – 61). If the combination of intrinsic and thermal stresses in the film is tensive and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate (column 6, lines 33 – 37). The flakes of film material can then be swept through with nitrogen and collected by a downstream filter (column 4, lines 16 – 17).

Gray does not explicitly teach that the shape of the stationary tray. The current specification teaches that the tray can have any geometric profile [0025], as opposed to the ordinary meaning of a tray. Therefore, the tray of Gray must have some sort of geometric shape that optimizes the surface area inside the chamber. And because the tray must be a three-dimensional object, it must have at least two surfaces.

Claim 2: Gray teaches that thermal stress occurs as the film temperature is changed from the deposition temperature and is the result of the usually different thermal expansion coefficients of the multilayered film materials and the substrate (column 6, lines 29 – 33). If the combination of intrinsic and thermal stresses in the film is tensive and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate.

Claim 3: The material having a high index of radiative reflectance is TiO_2 (column 4, lines 6-8).

Claim 4: The material having a low index of radiative reflectance is SiO_2 (column 4, lines 6-8).

Claims 7,8: The pigment flakes can be produced via chemical vapor deposition techniques (column 1, lines 7 – 12).

Claim 9: Gray teaches that the multilayer SiO_2/TiO_2 film can have 31 layers (column 6, lines38-43). Therefore, one of the TiO_2 films (i.e., comprising a high temperature metal, such as Ti) can be considered as part of the tray substrate.

Claim 10: One of the TiO_2 films can be considered as part of the tray substrate, as discussed above. According to www.Wikipedia.com, salts can be clear and transparent (sodium chloride), opaque (titanium dioxide), and even metallic and lustrous (iron disulfide). Thus, titanium dioxide is a form of opaque salt, and a titanium dioxide surface is comprised of a salt.

Claim 14: Gray is discussed above. Gray also teaches that a release layer can be provided to promote the removal of the pigmented film as flakes. The release layer 14 is deposited onto the substrate 13. The multilayer 15 can then be deposited onto the release layer (column 7, lines 1- 5; Fig. 2).

Claims 15-18: Gray discloses a SiO_2/TiO_2 multilayer having alternating layers of high and low index of radiative reflectance material. As this compound is the same as that disclosed by the Applicants to have the claimed spectral reflectance profile and said profile is a result of the material properties of the composition, Gray's SiO_2/TiO_2 multilayer inherently possesses the properties in claims 15-21. In addition, the inherency of the features of claims 15-16 is evidence in paragraph 3, lines 6-15 of the present specification, where it is stated "these coatings may reflect radiative energy that would act to further raise the surface temperature of the component, while simultaneously permitting radiative energy generated by the component itself to pass through the coating to further reduce the temperature of the component".

Claim 19: When the flakes are composed of multilayer films, with index of refraction changing from layer to layer, the spectral character of their reflectivity can be controlled. The surface may appear red when viewed at normal incidence and blue when viewed at a different angle (column 1, lines 32-40). Thus, the presence of color suggests that the flakes have properties in the visible spectrum.

Claims 20,21: Gray teaches the application of the flakes onto glass beads to simulate pearl buttons (column 1, lines 41-45). The glass bead loses its translucent property and becomes opaque after the application of the flakes. In essence, these flakes act as a paint layer on a glass surface. In addition, the layer of paint improved the visibility of the glass bead. An opaque glass bead is easier to see than a translucent one.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gray et al. (US 4,879,140).

Gray is discussed above, but does not teach a plurality of trays spaced at a predetermined arrangement and comprising a total surface area of at least about 100,000 square inches. However, having a plurality of trays in the chamber of Gray would increase the surface area for deposition. The increased surface area would allow for more of the SiO_2/TiO_2 material to be deposited, thereby increasing the production and efficiency of the process. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a plurality of trays having at least about 100,000 square inches in the chamber of Gray. One would have been motivated to do so in order to increase the output of radiative reflectance material and increasing the process efficiency.

9. Claims 11 -12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gray et al. (US 4,879,140), as applied to claim 1 above, in view of Andes et al. (US 6,284,032).

Gray teaches a multilayer SiO_2/TiO_2 coating as discussed above, but does not explicitly teach that the substrate comprises aluminum or gold. However, Andes teaches a method of making a multilayer interference pigment (abstract), wherein the material having low index of radiative reflectance can be SiO_2 or Al_2O_3 (claim 3). The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used Al_2O_3 as the particular material having low index of radiative reflectance with a reasonable

expectation of success because Andes teaches that such materials are suitable for making pigment flakes as taught by Gray. One of the Al_2O_3 layers can be considered as part of the tray substrate.

Response to Arguments

10. Applicant's arguments with respect to claims 1-12 and 14-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Thursday 8 - 5:30 and Friday 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7/24/06

TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER